Chair of Imaging and Computer Vision

RWTH AACHEN UNIVERSITY

Bachelor's or Master's Thesis

Learned Image and Video Compression using Overfitted Codecs

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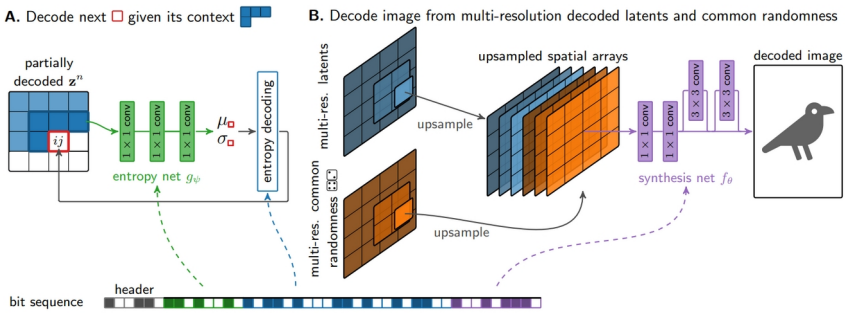
Background

Neural network-based approaches have made significant advancements across various fields. However, traditional video coding methods have been optimized over many years, and learning-based approaches often struggle to maintain high quality while keeping complexity low. Achieving real-time decoding requires a decoder with very low complexity.
To address this challenge, current research is exploring the concept of overfitted neural networks. In this approach, a small neural network is specifically trained to overfit a single image. This means that the network's parameters and some prior knowledge are tailored to accurately represent that particular image.



Tasks

- Explore current work on neural network-based image and video compression
- Test state of the art approaches on video compression on a common test set with regards to complexity and compression efficiency
- Improve overfitted codecs by transfering ideas from traditional video coding to neural video coding

Your Profile

We are seeking a motivated student to join our research team for a thesis focused on the intersection of signal processing and neural network based techniques. The ideal candidate should possess a solid foundation in signal processing principles and demonstrate an interest in deep learning.

Our Offer

Our institute features a cluster with 2000 CPU cores and 100 GPUs. We have more than 12TB of RAM and 1TB of VRAM available for computationally demanding tasks.